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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,325	01/09/2006	Richard Kretz	039185-2	7825

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EXAMINER	
MCGUTHRY BANKS, TIMA MICHELE	
ART UNIT	**PAPER NUMBER**
1793	

NOTIFICATION DATE	DELIVERY MODE
10/19/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/542,325	KRETZ ET AL.	
	Examiner	Art Unit	
	Tima M. McGuthry-Banks	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/16/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/16/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Status

Claims 1-16 are presented for examination.

Claim Rejections - 35 USC § 112

Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The claim of light metal pressure cast scrap is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Applicant discloses die-cast scrap on page 7, but pressure-casting includes two types of casting, die and squeeze.[1] The claimed limitation is broader than that disclosed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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[1] Friedrich, Horst E. and Mordike, Barry L. *Magnesium Technology: Metallurgy, Design Data, Applications.* Springer-Verlag Berlin Heidelberg, Germany. 2006. PP 234, 258-61.

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al (US 5,622,542) in view of Gesing et al (US 5,409,580) and ASM Handbook Volume 15.

With respect to Claim 1, Thomas et al reads on producing a metal foam comprising a metal matrix with gas substantially gas filled cells (Claim 1). The metal is heated above the liquidus temperature (column 2, lines 46 and 47) in an open vessel (column 4, lines 53 and 54). Though Thomas does not specifically state that melting occurs at atmospheric pressure, it would have been obvious to one of ordinary skill in the art at the time the invention was made that an open vessel would operate at atmospheric pressure. The gas component enters the open vessel and is entrained in the molten metal by the rotation of the impeller (column 4, lines 40-42). The precursor composite is then solidified and cast (column 6, lines 31 and 32). With respect to Claim 6, the matrix metal includes magnesium and magnesium alloys (column 4, lines 17 and 18).

However, Thomas et al does not read on using light pressure cast scrap as in Claim 1, solidifying under reduced surrounding pressure as in Claims 1 and 7, preheating the mold as in Claim 8, or using a heat-insulated mold as in Claim 9.

With respect to using light pressure cast scrap in Claim 1, Gesing et al teaches recovering light metal values from metal products including metal matrix composites (column 4, lines 53-66 and column 5, lines 64-69). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use these types of metal products to recover light metals because

recycling is important for economic and environmental reasons, and light metals are recycled on a large scale (column 1, lines 15-19).

With respect to solidifying under reduced pressure in Claims 1 and 7, ASM Handbook Vol. 15 teaches that hydrogen is removed from aluminum alloys by degassing (pp. 457-60), where the amount of reduced pressure at a given temperature (Fig. 20) affects the evolution of gas bubbles, resulting in different porosities from specimens with the same amount of gas present (Fig. 19 and p. 457). The pressure (vacuum) is therefore a result effective variable affecting the porosity of the resulting casting, and optimization of such in the process in Thomas et al would have been obvious to one of ordinary skill in the art (see MPEP § 2144.05, II, B).

Alternatively, the ASM Handbook Vol. 15 teaches the use of high-applied vacuum for casting (p. 11) aluminum alloys wherein the vacuum is used to fill the mold, providing high production rates and product with excellent mechanical properties (pp. 275-277). It would have been obvious to one or ordinary skill in the art at the time the invention was made to use vacuum mold filling as taught by the ASM Handbook in the process of Thomas et al to provide high production rates and product with excellent mechanical properties as taught by the ASM Handbook. Optimization of vacuum requirements needed to fill the molds would be a result effective variable, dependent upon mold and gate design (see MPEP § 2144.05, II, B) and would have been obvious to one of ordinary skill in the art at the time the invention was made.

With respect to preheating the mold in Claim 8, the ASM Handbook teaches that preheating greatly increases mold life and that repeated heating and cooling cycles over wide range of temperatures shorten the mold life (p. 281). It would have been obvious to one of

ordinary skill in the art at the time the invention was made to preheat the mold to increase mold life as taught by the ASM Handbook in the process of Thomas et al.

With respect to using a heat-insulated mold in Claim 9, the ASM Handbook teaches using a mold coating such as in insulating type (p. 281). It would have been obvious in view of ordinary skill in the art at the time the invention was made to use an insulating mold coating to prevent premature freezing, control the rate and direction of solidification, minimize thermal shock, prevent soldering, and to vent air (p. 281).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al in view of Gesing et al and ASM Handbook as applied to Claims 1 and 6-9 above, and further in view of Masten, Jr. (US 5,981,919).

Though Thomas et al teaches using cast alloys including aluminum A356 in column 4, lines 18-20, Thomas et al in view of Gesing et al and ASM Handbook does not specifically teach using die-cast alloys as introduced material as claimed in Claim 10. Masten, Jr. teaches that A356 aluminum is suitable for use in die casting (column 6, lines 49-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made that die-cast A356 aluminum alloy could be a matrix metal precursor in Thomas et al as taught by Masten, Jr.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re*

Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 6, 7, and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-5, 9, 10, and 19 of copending Application No. 11/597,737. Although the conflicting claims are not identical, they are not patentably distinct from each other because :

With respect to instant Claim 1, '737 Claim 1 discloses forming light metal parts from recycled gas-containing metal parts where the melt is solidified under vacuum; the claim does not require blowing gases or using blowing agents as instantly claimed. '737 Claim 2 discloses using light metal scrap. '737 Claim 3 discloses using die cast scrap, which is a type of pressure cast. '737 Claim 10 discloses producing the melt at atmospheric pressure.

With respect to Claim 6, '737 Claims 4 and 5 disclose using magnesium or magnesium alloys.

With respect to Claim 7, '737 Claim 9 discloses that solidification takes place in a pressure range of 10 to 400 mbar (0.01 to .4 bar).

With respect to Claim 10, '737 Claim 19 discloses using die casting scrap.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Claims 2-5 and 11-16 are free from prior art rejections. The prior art does not teach converting a metal into a compound before melting, enabling the compound to emit a gas soluble in the fluid metal.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yang et al (US 5,632,319) and Akiyama et al (US 4,713,277) teach using foaming agents to produce foamed metal such as aluminum.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tima M. McGuthry-Banks whose telephone number is 5712722744. The examiner can normally be reached on M-F 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TMM
9/20/2007

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